Rapid Targeting Technology

Development of the Controlled Reference Image Base

By Ken Koch

Naval Air Warfare Center Weapons Division
China Lake, California

Rapid Targeting Technology
Overview

- Georeferencing Tactical Imagery
- CRIB: Creating a Georeferenced Database
- Meeting Operationally-Driven Schedules
- Naval Air Warfare Center China Lake Distributed Center
- Successful Employment in Tactical Operations
- Q&As

Rapid Targeting Technology

Georeferencing Tactical Imagery

- Air strikes today may take place in urban environments where targets are surrounded by a noncombatant populace
- Many valuable targets are mobile or transient, making time-critical responses a priority
- Obtaining tactical imagery using georeferencing can put precise GPS location data into the hands of the warfighter in minutes

Rapid Targeting Technology

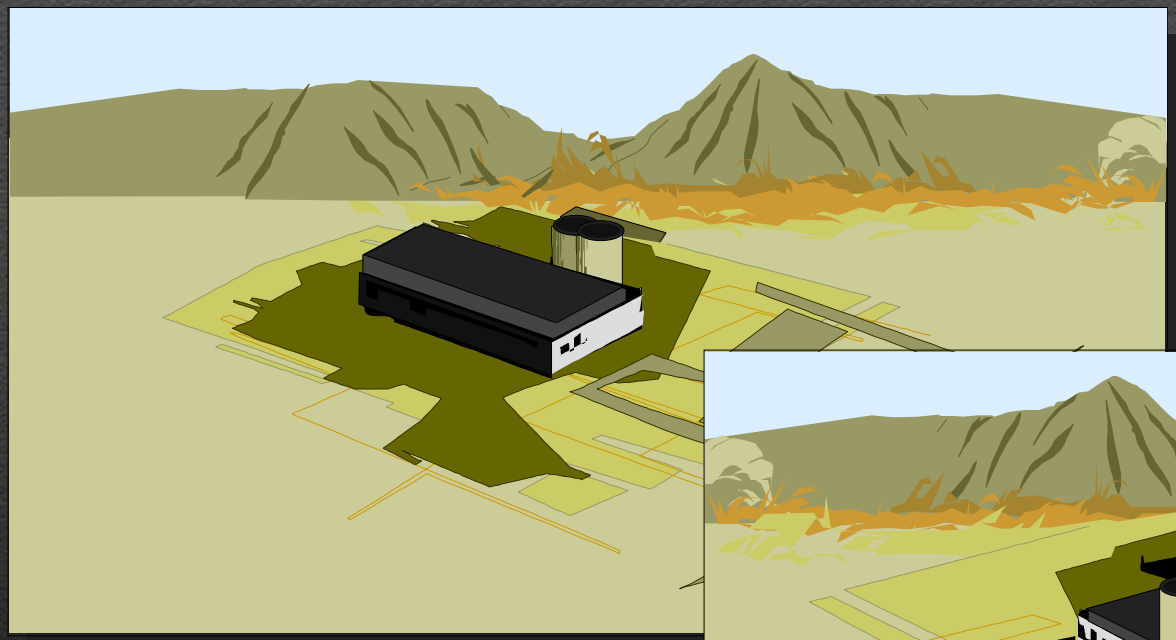
Georeferencing Tactical Imagery

- Engineers and analysts at the Naval Air Warfare Center Weapons Division have developed a georeferenced database called the Controlled Reference Image Base (CRIB) to register and correlate tactical imagery

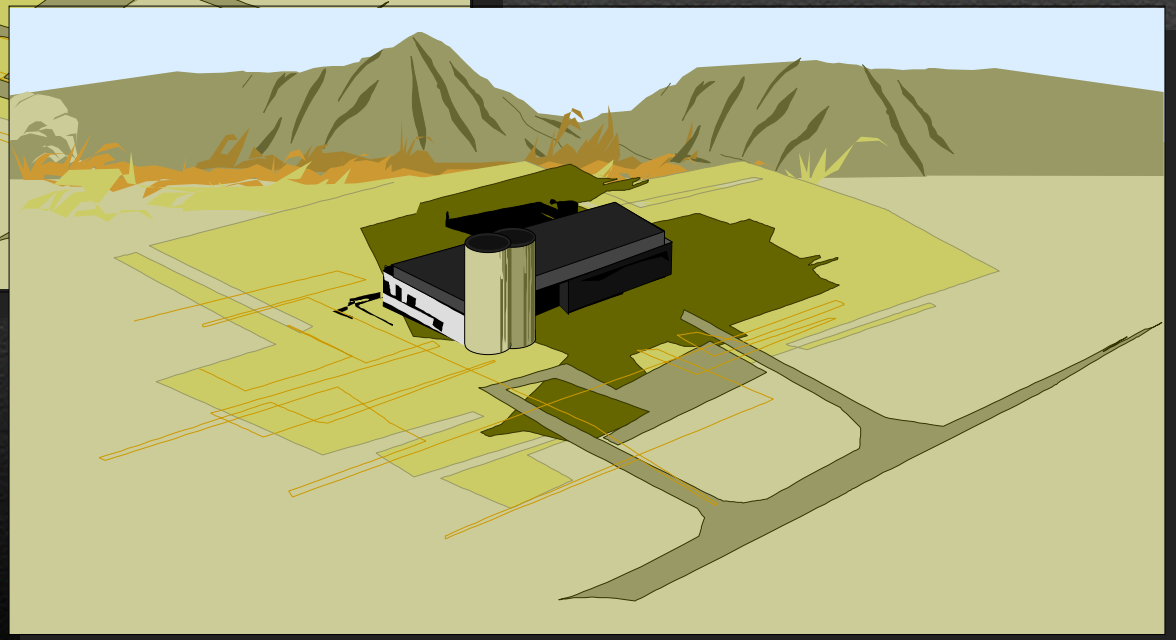
- CRIB is derived from NIMA's DPPDB which consists of a series of stereo-pair views of the earth

Rapid Targeting Technology

CRIB



Raw Data



Artist Concept

Rapid Targeting Technology

CRIB

Ortho-Rectified Image

- This process produces a flat, uniform image

Rapid Targeting Technology

Meeting An Operationally-Driven Schedule

- Military Operations in Kosovo showed an urgent need to make better use of tactical imagery for prosecuting time-critical targets
- NRO deployed a developmental program to correlate unmanned aerial vehicle (UAV) imagery frames, with imagery from the CRIB

Rapid Targeting Technology

Meeting An Operationally-Driven Schedule

- Transferring DPPDB from NIMA and generating digital terrain and ortho-rectified images require significant computational time
- One terrain file of 2 min. long. X 2 min. lat. Required 1-1.5 hours on Sun Ultra 2 300-Mhz processor
- With available equipment, 35 days would be required to complete a single block. The entire process would have taken 6.5 months
- Naval Air Warfare Center China Lake Distributed Center

Rapid Targeting Technology

Naval Air Warfare Center China Lake Distributed Center

- IBAR used Silicon Graphics (SGI) Onyx2 Infinite Reality processors
- Software was configured to allow multiple systems to render data
- CRIB complete in 28 days

(SGI Onyx 2)

Rapid Targeting Technology

Successful Employment In Tactical Operations

- Data loaded onto 8-mm tapes and sent to users
- TFP program searches CRIB master list and loads terrain and image files. “Tie Points” between CRIB and UAV images are located and TFP correlates the imagery
- Operator can select any point on the UAV frame and CRIB will provide precise coordinates

Rapid Targeting Technology

Successful Employment In Tactical Operations

CRIB's value in Kosovo also had applications in intelligence and strike planning